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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,275	12/18/2001	Walter Takeo Yagyu	08200.608	9120
7590 03/31/2008 Liniak, Berenato, Longacre & White Ste. 240 6550 Rock Spring Drive Bethesda, MD 20817				
EXAMINER FERGUSON, MICHAEL P				
ART UNIT		PAPER NUMBER		
3679				
MAIL DATE		DELIVERY MODE		
03/31/2008		PAPER		

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WALTER TAKEO YAGYU

Appeal 2008-0144
Application 10/020,275
Technology Center 3600

Decided: March 31, 2008

Before WILLIAM F. PATE, III, TERRY J. OWENS, and
JOSEPH A. FISCHETTI, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

The Appellant appeals from a rejection of claims 1-3, which are all of the pending claims.

THE INVENTION

The Appellant claims a tie rod comprising a fiber-reinforced polymer composite stem attached at each of its ends to a ball joint having a metallic ball joint box. Claim 1 is illustrative:

1. Tie rod with application of polymer composite with fiber reinforcement, comprising a stem provided at its ends with ball joints each composed of a metallic ball joint box, a bearing, a protection cover and a ball pin, said tie rod having the function of fixing pieces and components of a mechanical system between themselves, providing to them angular and rotational movement, supporting the strains concentrated therein, wherein the stem of the tie rod is made of material comprising a polymer composite with fiber reinforcements, and combined with components of the metallic ball joint box.

THE REFERENCES

Kobayashi	US 5,092,703	Mar. 3, 1992
Shimizu	US 5,368,408	Nov. 29, 1994
Pazdirek	US 6,398,446 B1	Jun. 4, 2002

(effective filing date on or before Feb. 23, 1999)

THE REJECTION

Claims 1-3 stand rejected under Shimizu in view of Pazdirek and Kobayashi.

OPINION

We affirm the Examiner's rejection.

Claim 1

The Examiner relies upon Shimizu's figure 6 as showing a metallic ball joint box having a variable length stem threadedly attached thereto using a nut (Ans. 3-4).

Pazdirek discloses a ball joint assembly (10) comprising a link (22), each end of which has a ball joint (12) attached thereto (col. 2, ll. 3-6; fig. 1). Preferably the ball joint 12 housing (14) is injected molded from a

high strength thermoplastic material such as 30% glass filled nylon 6/6 (col. 2, ll. 21-23; col. 4, ll. 6-8). Link 22 preferably is tubular, but can be solid, and can be formed of an aluminum alloy (col. 2, ll. 59-60; col. 4, ll. 15-16, 41-43). Preferably link 22 is attached to the ball joint housings 14 by heating the ends of link 22 to melt the plastic housing 14 partially such that the plastic flows into the knurled tube surface of link 22 for a strong mechanical joint after the parts cool (col. 4, ll. 22-25). Alternatively, link 22 can be a composite rod and can be adhesively secured to ball joint housings 14 (col. 4, ll. 43-45).

Kobayashi discloses a ball joint comprising a housing (1) having two ball joint chambers and a connecting portion that are integrally formed of a composite of a synthetic resin such as polypropylene and, for strength improvement, an inorganic filler such as glass fiber (col. 1, ll. 8-9; col. 7, ll. 35-44; fig. 2).

The Appellant argues that Pazdirek's disclosure that the attachment of a metal link to the housing preferably is by partially melting the housing material, whereas the attachment of a composite link to the housing is by adhesive, indicates that the physical characteristics of metal and composite materials are very different (Br. 5; Reply Br. 2).

That difference in physical properties is the apparent reason why Pazdirek attaches the composite link using adhesive instead of partially melting the housing material. Regardless, Pazdirek discloses attaching a composite link to a composite housing using adhesive (col. 4, ll. 6-8, 43-45).

The Appellant argues that “Pazdirek fails to disclose the housing made of metal material, hence the combination of the tie rod made of a polymer composite material with fiber reinforcements and the metallic ball joint box” (Br. 5; Reply Br. 2).

The Appellant is arguing that Pazdirek fails to anticipate the claimed invention. That argument is not relevant to the Examiner’s obviousness rejection.

The Appellant argues that Kobayashi fails to disclose a stem and ball joint box made of different materials (Br. 5-6; Reply Br. 3).

Kobayashi discloses that “[c]onventional ball joints are disadvantageous in terms of weight and the problem of rust because they are formed of metals” (col. 1, ll. 26-28), whereas synthetic resin ball joints “entail various problems relating to coming-off of the ball stud, the rigidity of the housing, the durability and the manufacturing cost of the ball joint, and the sealing properties and the attachment of the dust cover, and so on” (col. 1, ll. 52-57). Although Pazdirek discloses only a synthetic resin housing, this disclosure by Kobayashi would have led one of ordinary skill in the art, through no more than ordinary creativity, to select for use with Pazdirek’s composite rod, based upon the desired balance of the advantages and disadvantages of metal and synthetic resin as disclosed by Kobayashi, either Pazdirek’s disclosed synthetic resin housing or a metal housing. *See KSR Int’l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007) (In making the obviousness determination one “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”). For

example, one of ordinary skill in the art who desired to reduce the ball joint assembly's weight but have a metal housing's benefits of secure connection of the ball stud to the housing, high housing rigidity, high durability, low manufacturing cost, and good sealing properties and dust cover attachment would have used in Pazdirek's ball joint a composite link 22 adhesively secured to a metallic housing 14.

We therefore are not convinced of reversible error in the rejection of claim 1.

Claim 2

The Appellant argues that "none of the prior art references applied by the Examiner teaches the composite tie rod attached to the metallic ball joint box by chemical fixing" (Br. 7).

If the Appellant is arguing that none of the prior art references discloses the combination of a composite stem and a metallic housing, that argument is not persuasive for the reasons given above regarding the rejection of claim 1.

If the Appellant is arguing that Pazdirek fails to disclose chemical fixing, Pazdirek's adhesively securing a composite rod to a composite housing (col. 4, ll. 6-8, 44-46) is chemical fixing. Pazdirek would have led one of ordinary skill in the art, through no more than ordinary creativity, to likewise use adhesive to attach the composite rod to a metal housing.

Accordingly, we are not persuaded of reversible error in the rejection of claim 2.

Claim 3

The Appellant argues that “none of the prior art references applied by the Examiner teaches the composite tie rod threadedly and adjustably connected to the metallic ball joint box” (Br. 7).

If the Appellant is arguing that none of the prior art references discloses the combination of a composite stem and a metallic housing, that argument is not persuasive for the reasons given above regarding the rejection of claim 1.

If the Appellant is arguing that none of the prior art references discloses a tie rod threadedly and adjustably connected to a housing, the Examiner finds that such a combination is disclosed in Shimizu’s figure 6 (Ans. 6). The Appellant has not addressed the Examiner’s finding and explained why it is in error. Because the Examiner’s finding is reasonable and has not been challenged by the Appellants, we accept it as fact. *See In re Kunzmann*, 326 F.2d 424, 425 n.3 (CCPA 1964). Shimizu would have led one of ordinary skill in the art, through no more than ordinary creativity, to use a threaded connection and nut to attach Pazdirek’s stem and housing to provide the readily apparent benefit of variable length of the ball joint assembly.

Hence, we are not persuaded of reversible error in the rejection of claim 3.

DECISION

The rejection of claims 1-3 under Shimizu in view of Pazdirek and Kobayashi is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

vsh

LINIAK, BERENATO, LONGACRE & WHITE
STE. 240
6550 ROCK SPRING DRIVE
BETHESDA MD 20817